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No. 82. N. SER.] FEBRUARY, 1862. [No. CCXL.

THE
PHYTOLOGIST.

A BOTANICAL JOURNAL.

'Ως ἐμεγαλύνθη τὰ ἔργα σου, Κύριε!—*πάντα ἐν σοφίᾳ ἐποίησας.*
ΨΑΛΜ. *ργ΄*. 24.

Benedicite universa germinantia in terra Domino; laudate et superexaltate Eum in secula.—*Hymn. iii Pueror. v.* 76.

LONDON:
WILLIAM PAMPLIN, 45, FRITH STREET, SOHO.

J. E. TAYLOR, PRINTER, LITTLE QUEEN STREET, LINCOLN'S INN FIELDS.

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ANCIENT SCOTTISH BOTANY.

By CHARLES HOWIE, *St. Andrew's.*

'Scotia Illustrata,' an illustrated work on the Natural History of Scotland, comprehends, among other matters, certain chapters on Scottish plants. The learned author, Sir Robert Sibbald,[*] divides botany into three heads, divisions, or classes, viz. in the first book of the second part of his 'Prodromus,' he describes the spontaneous or indigenous vegetation of Scotland; and in the second book he treats of the medicinal and economical herbs cultivated in the Botanic Garden in Edinburgh, then under the curatorship of James Sutherland. Between these two books there is a catalogue of the natural vegetation of the King's (Queen's) Park, Edinburgh.

His method is the following:—First, he states the name of the plant, with the authority, usually Bauhin's 'Pinax,' or J. or C. Bauhin; second, the characteristic marks of the species or genus; third, its quality (*vires*, qualities); lastly, its application, viz. external, internal, etc.; and occasionally he gives the locality.

The following is not a sample of his elaborate treatise, but a selection from it.—

One of the most important of the rarities enumerated by Sibbald is *Lavatera arborea*, Tree Mallow; which grows "in Inch Garvie and Mykrie Inch, in the Firth of Forth" ('Scotia Illustrata,' part ii. p. 37, cap. xii.).

Inch Garvie is a small steep rock, accessible only on the west, where it slopes down to the beach. Mykrie is about a quarter of a mile in diameter.

Cochlearia officinalis grew, in Sibbald's time, upon the rocks of Inch Columb, in the north, by the seaside. Also, the round-leaved form (*C. rotundifolia*) is found on hills near the river Tweed. Inch Columb is about half a mile long, and one hun-

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[*] This eminent naturalist, physician, and historian was born before the middle of the seventeenth century, and was educated for the medical profession in Scotland and in Holland. He was appointed Physician to his Majesty King Charles II., and also Royal Historiographer. His 'Scotia Illustrata,' or 'Prodromus Historiæ Naturalis Scotiæ' was the result of his appointment. Dr. Andrew Balfour, the founder of the Edinburgh Botanic Garden, was his associate in his botanical excursions. 'Scotia Illustrata' was published in folio at Edinburgh, 1684, and was the labour of twenty years.

BRITISH MUSEUM

dred and fifty yards wide. It is on the north coast, about two miles from Aberdour.

In a garden adjoining the remains of the old monastery there are still (?) to be seen the female Peony, bearing seed. It is inferred that this single form of Peony is the original form from which the double Rose Peony or Hunder-bladed Tulip is derived. Here grow also Borage, Pellitory, Dwarf Elder, *Atropa Belladonna,* and other introduced plants.

Chenopodium olidum grows on the islet or rock called the Haystack, about half a mile from Inch Colm (Inch Columb).

Inchkeith, which adds much to the picturesque attractions of Edinburgh, produced the following plants when visited by this learned botanist, viz. many Docks and Chenopods, *e.g. Tota bona, Chenopodium Bonus-Henricus,* Scabious, Thyme, Spattling Poppy, Plantain, Thrift, Ground Ivy, Henbane, *Xanthium Strumarium?,* Blessed Thistle, Horehound, etc., sufficient for the cure of most diseases with which the inhabitants of braw and bonnie Scotland are afflicted.

The Bass, which the French called the Isle of Geese, from its being the resort of myriads of sea-birds and solan geese especially, in addition to the well-known Tree Mallow, yields another plant whose identity is not yet very satisfactorily determined. Hector Boece, the elegant, veracious historian of Scotland, has left a description both of the Rock and of some of its productions; and his account was rendered into the then Scottish vernacular by John Bellenden, the Archdeacon of Moray and Canon of Ross, as follows :—The Bass is "a wonderful crag, risand within the sea, with sa narro and strait hale that schip nor bait may arrive but allanarlie at ane part of it; it is unwynnabill be ingyne of men." Besides the ordinary herbs, the *Malva arborea marina* and the *Beta marina* grow here. Boethius probably refers to the following culinary vegetable, viz. "In this crag grows ane rycht delicius herbe and quhen it is transportit or plantit in ony ither part it is of little sapor or gust."

The following list of Bass Rock plants is from an account of the vegetation of the Bass supplied by Dr. Balfour, the eminent Professor of Botany in the University of Edinburgh. The list is published in a work descriptive of the civil and natural history of this historic locality :—*Hypochœris maculata, Calendula pluvialis, C. arvensis, Hieracium chondrilloides, Tragopogon porrifolius,* *Narcissus Pseudo-Narcissus, N. biflorus, Beta maritima, Lavatera arborea, Crambe maritima, Vicia lathyroides, Carduus palustris.* From the above it appears that exotics have intruded among the native productions of this small, remote, insulated rock.

The principal plant found on the Isle of May is *Armeria maritima*, a plant which is used for the edging to garden-walks; and those who have only seen in it in this utilitarian state, where it appears flat and tame, but not unprofitable, do not know the brilliant hues it assumes in this islet, where it grows in the greatest profusion. Its varieties are of all shades of colour, from pure white to the intensest and glossiest shade of pink or carnation. *Asplenium marinum* ornaments a cave on the south side with its rigid fronds; and here also *Artemisia maritima* is found in fine condition. To the lovers of lichenology this island will afford the greatest gratification. Here the isolated rocks, both large and little, in their lower parts wet and dripping from the incessant surge dashing or rippling against them, are densely clothed on their upper portion with Lichens, which grow in the greatest luxuriance and beauty.

BOTANY OF SPAIN.

A few Days' Botanizing in the North-Eastern Provinces of Spain, in April and May, 1860.

No. IV. Spanish Pyrenees; Andorra.

A short excursion from the French to the Spanish side of the Pyrenees, about a fortnight after the termination of our tour in Spain, yielded some botanical acquisitions which deserve to be added to the brief records already given of Spanish botany. The interval had been passed in the richest botanical districts of the Eastern Pyrenees, but with results unexpectedly scanty, the backwardness of the season having deprived me of the majority of the plants which I might otherwise have reasonably expected. I hoped that on the southern side of the chain I might have better fortune; nor was I altogether disappointed.

We crossed the watershed of the Eastern Pyrenees at the head of the long oblique valley of the river Tet, which during the greatest part of its length forms, not a right, but an acute angle with the general direction of the mountain-chain. The range is crossed, not by a pass, but by a considerable breadth of gently sloping and waving corn country, which, though flanked by lofty summits and dark fir woods, is as easily traversable by an army as Salisbury Plain, and an invasion of either country from the other at this point would meet with no physical obstacles near the summit, whatever they might possibly find in the defiles lower down. Accordingly, the deficiency of natural is made up, on the French side at least, by artificial defences. A green knoll on the border of the waving country is crested by one of the most strongly fortified military posts in the country, the town of Mont Louis,—for a town in all respects it is, though with only a few hundred inhabitants,—overtopped by a citadel, the work of Vauban, larger than the town itself. At this point the French territory projects for some miles on the Spanish side of the Pyrenees, as the Spanish territory does on the French side about the head-waters of the Garonne. French Cerdagne, as it is still popularly called, forms a richly cultivated valley, or rather, inclined plane, of such width as to make the high mountains which bound it appear what I might almost call distant. This fertile slope is terminated by a little stream, which separates Bourg-Madame, the frontier village in the French territory, from Puycerda, the capital of Spanish Cerdagne, a genuine Spanish town of some importance, on a height which projects far into the valley, and commands, from a small planted promenade on its southern side, a view over the Spanish part of the valley and the adjoining mountains, which it was worth the whole journey to see. From Puycerda to Urgel, the chief place in this part of the Spanish Pyrenees, is a long day's journey on foot or on muleback. The valley differs from mountain valleys in general in being more picturesque in the descent than in the ascent, the upper extremity, as may be gathered from what has already been said, being the tamest instead of the boldest part of its Alpine panorama. The beauty seemed always to increase as we descended the valley, Urgel itself being the most beautiful place in the whole descent.

The Flora of this district, as usual on the southern declivities of mountain ranges, is a mixture of mountain plants with those of the plains below. In the upper part of the valley the meadows have the floral magnificence characteristic of the Pyrenees, where the open mountain pastures in June, before the grass has been cut or the cattle driven in among them, are often one mass of bloom, giving its colour to the mountain sides from a great distance. The meadows for many miles below Puycerda were of this character. They were as white with *Narcissus poeticus* as English meadows at the same season are yellow with Buttercups. In other places the dark variety of Columbine (*Aquilegia vulgaris*) divided the honours with the Narcissus, or engrossed the larger part; while several Umbellifers in full flower contributed a different kind of white colour to the mixture, particularly *Chærophyllum hirsutum*, with a plant resembling *Pimpinella magna*, and, I believe, *Ligusticum pyrenæum*; the fruits of neither being yet in a state to admit of their being determined. The other plants of which I made a note are the following:—

Of *Ranunculaceæ*, the finest, besides the Columbine, was *Adonis flammea*, with flowers of the same bright colour but greater size than those of *A. autumnalis*. *A. pyrenaica*, though common among the corn near Bourg-Madame, I did not see on the Spanish side of the frontier. The remaining *Ranunculaceæ* were *Clematis Vitalba* and *Flammula*, *Helleborus fœtidus* (a plant universal in the Pyrenees), and *Caltha palustris*. The *Papaveraceæ* I saw were *Papaver Rhœas*, *Chelidonium majus*, and *Hypecoum procumbens*. There were, as usual, many Crucifers. Of Alyssums, there were (besides *A. calycinum*) the plant which I had found at Alcolea, and called *A. perusianum*, and a yellow species akin to *montanum*, *A. cuneifolium*. *Erysimum lanceolatum*, a frequent plant of the Pyrenees, was there, with its large bright yellow flowers; and three *Sisymbria*, *S. Sophia*, *obtusangulum*, and a common Pyrenean species, with a mass of flowers succeeded by long spikes of slender highly curved pods, *S. austriacum*, the most common variety of which is otherwise known as *Sinapis pyrenaica*. The only *Arabis* I noticed was, I believe, *Gerardi*. The *Biscutella* was not the Monserrat species (or variety), but the common Mediterranean plant, *B. ambigua*. I had previously found in the valley of the Tet, near Fonpedrouze, a much rarer species, *B. cichoriifolia*, resembling the former in little except the twin shields, from which the genus derives its name. Of other *Siliculosæ*, I noted *Iberis amara*, *Thlaspi arvense*, *Lepidium heterophyllum*, the plant of which our *L. Smithii* is classed by French botanists as a variety, and the stately spreading *Neslia paniculata*, with its nearly globular pods. The genus Cistus seemed wanting in this district, though one of its noblest species, a Gum-Cistus, *C. laurifolius*, abounds where it was less to be looked for, on the sloping side of the corresponding French valley, a short distance below Mont Louis. The only Helianthemum I saw was either *H. vulgare* or one of the plants which are sometimes reckoned varieties of it. As might be expected, there were *Reseda Phyteuma* and *fruticulosa* and *Polygala vulgaris*. The *Caryophylleæ* visible were *Saponaria ocymoides* and *vaccaria*, the common *Lychnis vespertina* and *Agrostemma Githago, Silene inflata*, and the elegant *S. saxifraga*, with its funnel-shaped flowers, so common in the mountain valleys of the south of Europe. There were two splendid Linums, *L. narbonense* and a smaller plant with paler flowers, which I suppose to be *decumbens*, intermediate between *tenuifolium* and *suffruticosum*. The *Malvaceæ* were the common *Malva rotundifolia* and *sylvestris*. The *Geraniaceæ* were *Erodium cicutarium, Geranium Robertianum, sanguineum*, and *pyrenaicum*. The name of the last, mysterious to those to whom it is only known as a plant of Surrey and Kent, is intelligible to those who have seen its abundance in the Pyrenees. The Wild Vine (*Vitis vinifera*) spread its climbing stems and grasping tendrils over the bushes.

Of *Calycifloræ*, I begin with the Terebinth-tree, *Pistacia Terebinthus*. *Leguminosæ* were, as usual, one of the most abundant of all the Orders. Along with the *Genista Scorpius* of the plains there was *G. sagittalis* of the mountains, and *G. pilosa* of both; all plants which by their beauty do credit to this fine genus. Of *Cytisi*, there was the beautiful *C. sessilifolius*. The only Trefoils I observed were *T. pratense* and *repens;* but the prevailing Medicago was a special plant of the Eastern Pyrenees, *M. suffruticosa*. The *Viciæ* were in number five: *V. sativa, sepium, crassa*, a glorious dark-purple species (*V. onobrychioides*), and the duller-coloured *V. pannonica*. *Lotus corniculatus* and *Hippocrepis comosa* abound here as everywhere. I saw but one Astragalus, I believe *A. purpureus*, a purple-flowered, erect, rather dwarfish plant, approaching to *A. hypoglottis*. I conclude the Order with the small decumbent Sainfoin of southern Europe, *Onobrychis supina*. Of the Order *Rosaceæ*, there were *Cratægus Oxyacantha, Amelanchier vulgaris*, and *Poterium Sanguisorba;* but the genus *Rosa*, above all, was in profusion. The town of Urgel is in the midst of a sort of garden of wild Roses: every hedge and enclosure is loaded with them in a quantity and of a size to which I never saw even an approach elsewhere. The species must be numerous, but I regret my inability to record them. The fatigue of the journey, the multitude of other plants to determine and put into paper, and the difficulty of dealing with this genus without the fruit and without proper books, deterred me from the attempt. *Rosa tomentosa,* or some species near to it, appeared to be one, and another resembled, in the appearance of its stem, *R. spinosissima,* but with much larger flowers; in fact, as I have already mentioned, the size of the Roses was quite as remarkable as their profuse abundance.

Saxifraga Aizoon, now in full flower, one of the common mountain species of the Alps and Pyrenees, dotted the rocks of the valley with its white rosettes of spatulate coriaceous leaves. Sedums were numerous: among others, *S. acre, Telephium,* and (though not in flower) *altissimum,* like a large white-flowered *S. reflexum.* Another plant of the same Order, *Umbilicus pendulinus,* as common on moist rocks and walls in the south of Europe as in our western counties, was also present. *Bryonia dioica* was visible, and *Paronychia serpyllifolia,* a mountain species, takes the place of *P. argentea.* Of Umbellifers, besides those already mentioned, I saw *Heracleum Sphondylium* (unless it was the very similar *H. pyrenaicum*), *Bupleurum rotundifolium,* and, I believe, *Orlaya platycarpa.* The Cornel-tree (*Cornus sanguinea*) was as common here as elsewhere. Of the Order *Caprifoliaceæ,* there were the common Elders (*Sambucus nigra* and *Ebulus*), and two Honeysuckles, *Lonicera implexa* of the plains, and *Xylosteum* of the mountains. There were the blue *Asperula arvensis* and several *Galia;* two *Valerianeæ, V. officinalis* and *Centranthus angustifolius; Dipsacus sylvestris,* and a *Knautia,* apparently a variety of *K. arvensis.*

Compositæ were of course less numerous than in the plains or at a later period of the year. There were, however, several. *Achillea odorata,* a plant of southern Europe, like a dwarf *A. Millefolium,* with a sweet smell of camomile, was one. With this was a Santolina, probably *S. Chamæcyparissias,* an *Artemisia,* probably *campestris,* and the universal *Leucanthemum vulgare.* Of Thistles on this occasion I have no note. The Centauries were *C. Cyanus, C. Scabiosa,* and another species, not uncommon on the less elevated mountains of the South, *C. pectinata,* deriving its name from the comb-like structure of its involucral appendages.

Of Cichoraceous *Compositæ*, I noticed *Scorzonera humilis*, *Tragopogon pratensis*, a Hieracium (*H. murorum?*), the fine blue Lactuca of Continental cornfields, which almost reaches our own latitudes, *L. perennis*, and two much rarer plants, both of which I only found within a short distance of Urgel, one in the bed of the torrent, a stiff, widely branched plant, coated all over with a fine white wool, which I guessed rather than ascertained to be *Andryala macrocephala* of Boissier; and, growing within the spray of a waterfall, a Sonchus, with undivided leaves, allied to *S. maritimus*, which was certainly *S. crassifolius*.

Passing now to the *Corolliflorœ*, I did not find in this day's journey either *Gentianeœ* or *Primulaceœ*, plants which, for the most part, require higher elevations, or at least cooler and moister valleys. *Vincetoxicum officinale*, so abundant on calcareous soils, even far north, and which ought to grow in England, was there; so also Privet (*Ligustrum vulgare*), a plant equally at home in north and south; and the only European Jasminum, *J. fruticans*, a yellow species, and rather frequent in the south of France, but not beyond the Mediterranean region. Our northern Ash, *Fraxinus excelsior*, grows here, which, in the south, is principally a mountain tree. I saw no *Convolvulus*, except *C. arvensis*, though I should have expected *C. cantabrica*, which comes up as high, or higher, in other southern mountains. The *Boragineœ* were not remarkable: *Echium vulgare*, *Lithospermum arvense* and *officinale*, *Anchusa italica*, *Lycopsis arvensis*, and our common Cynoglossum, *C. officinale*. The *Solaneœ* were *Solanum Dulcamara*, as common in the south as in the north, and *Hyoscyamus niger*. There were several Verbascums, *V. floccosum* apparently being one. *Scrophularineœ* and *Labiatœ* were, as might be expected, the most numerous Orders; of the former there were *Scrophularia canina* and *nodosa*, *Rhinanthus glaber*, *Veronica Teucrium* and *serpyllifolia*, the stately *Digitalis lutea*, *Linaria supina*, and two Antirrhinums proper—the pale-flowered *A. Asarina*, which, as in many other parts of the Pyrenees, hangs like tapestry on the perpendicular rocks, and *A. latifolium*, looking like a yellow variety of *majus*. The *Labiatœ* were *Lavandula Spica* and *Mentha sylvestris* (the British plant so common in Switzerland), *Salvia clandestina*, and another (I believe *phlomoides*), our ugly *Ballota fœtida*, *Lamium maculatum*, *Stachys recta*, which, like *Digitalis lutea*, reaches northward as far as Normandy; both the Thymes, *T. vulgaris* and *Serpyllum;* and in great abundance a common Sideritis, *S. scordioides. Globularia nana,* as elsewhere in the Pyrenees, coated the rocks with its small leaves, its numerous heads of flowers, and its clumsy woody stems, so creeping that they seem adherent to the soil. An Armeria, seemingly *A. plantaginea,* represented the Order *Plumbagineæ;* and *Plantago* was represented by *P. media,* and the mountain species, *P. carinata.*

Of *Apetalæ,* the most worthy of notice was *Aristolochia Pistolochia,* with its almost black flowers, one of the smallest species of this curious genus. The *Polygoneæ* were *Polygonum Bistorta,* as abundant as it usually is in moist mountain meadows, *Rumex acetosa,* and *R. scutatus,* with its singular leaves, a plant as common in the vineyards near Coblentz as in the south of Europe. The *Euphorbiæ* were *E. serrata, Cyparissias, Characias,* the polished *E. nicæensis,* and another, to me unknown. To these may be added the shrubs or trees, *Quercus coccifera, Buxus sempervirens,* and *Celtis australis.*

The *Monocotyledoneæ* were finer than I expected, and finer than I found in my next day of botanizing. There were *Orchis mascula, O. galeata* (by some reduced to *militaris,* but the form of the flower, admirably figured by Woods, is decidedly different), *Aceras anthropophora,* which recalled pleasing memories of the Surrey hills; *Narcissus poeticus,* as already mentioned; one of the plants common to alpine and maritime situations, *Allium Schœnoprasum* (but I am not sure this plant does not belong to the next day's district); the Grasses, *Bromus tectorum, Briza media, Ægilops ovata, Melica Magnolii;* and the Ferns, *Asplenium Trichomanes* and *Adiantum Capillus-Veneris.*

Urgel, properly La Seu (or Seo) de Urgel, better known locally as La Seu simply (*the See,* its bishop having for many centuries been one of the chief princes of the country), is the most characteristic, old-looking, and picturesque of small Spanish towns. We entered it after nightfall. I shall never forget the moonlight look of its dark streets, its *jalousies* and overhanging balconies. The situation is one of the most glorious in the whole Pyrenees. It lies far down in the long valley which we had been a day and a half in descending; but the valley does not open to the plain; it is crossed, and, in appearance, closed a little below the town, by a low range, with a striking peaked outline, which regaled our eyes as we saw it before us during the latter half of our day's journey, and appeared more beautiful still when seen from the promenade outside the walls of Urgel, or from the terrace or *loggia* of our very Spanish, but quite habitable inn. All experienced travellers know how much the beauty of a range of mountains, under a glaring sun, is improved by seeing it on its shady side. Of the little narrow plain into which the valley expands immediately round Urgel, I can say nothing botanically, except to repeat that is a perfect paradise of Roses.

We had decided to find our way back to France by the valley of Andorra. Of this curious middle-age republic, independent equally of Spain and France, though under their joint protectorate, a description may be read in the 'Edinburgh Review' for April last. The writer has given a very interesting account of its history and of its institutions; but he seems somehow to imagine that he is the discoverer of Andorra, at least to Englishmen. It was however explored as long ago as about 1824, by two eminent English botanists—Mr. Bentham and Mr. Walker Arnott; the former of whom, in the narrative of his tour in the Pyrenees, prefixed to his valuable catalogue of their plants, gave a clear and succinct description of the country. Since then it has been occasionally visited by English tourists, one of whom, Mr. Erskine Murray, devoted to it no small portion of his well-known book. Respecting the institutions of the country, much was left for the reviewer to do; and he has done it, to all appearance, well. He makes one statement, however, which I hope is not correct, that "in this republic education is a thing almost unknown." I cannot affirm that this is not the fact; but the standard French 'Guide to the Pyrenees,' the elaborate volume of Joanne, affirms that "l'instruction publique est plus répandue en Andorre que dans les territoires voisins de l'Ariége et d'Urgel; les écoles sont gratuites, et la plupart des jeunes gens aisés vont faire leurs études à Toulouse ou à Barcelone."* The reviewer's description of the local features of the country is that of one who has only visited it from the French side. He says it is "isolated by mountains on every frontier." This is neither more nor less true of the Val d'Andorre than it is of every other Pyrenean valley. None of them have more than one outlet into the plain. Andorra is simply the upper end of a Spanish valley (one of several which meet at Urgel), with the addition of two other valleys branching out of it. From France of course they can only be reached across the main chain, but the access from Spain is not more difficult nor mountainous than that to any other place in the Pyrenees.

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* Public education in Andorre is superior to that of Ariego and Urgel. Instruction is gratuitous; pupils can easily complete their studies at Toulouse or Barcelona.

In the lower or Spanish part of the valley the plants were chiefly those which I had seen in the descent from Puycerda, with one or two additional, particularly *Phalangium Liliago,* an elegant white-flowered plant of the Order *Asphodeleæ,* and a fine Thistle, which I had seen in a former year on the Spanish side of another of the Pyrenean passes, *Cirsium rivulare.* When however we entered Andorra, the Flora soon assumed a far more mountain character, though here also occasionally varied by southern plants, the most remarkable of which was a Maple, *Acer monspessulanum,* with three-lobed coriaceous leaves. To begin at the beginning, *Trollius europæus* now raised its globular heads in the rich meadows; and I saw, for the first time in Spain, two mountain *Ranunculi, R. Villarsii,* L., towards the head of the valley, and the tall white *R. aconitifolius,* the stateliest of its tribe. Of Crucifers there were now a *Barbarea* (probably *B. arcuata*), *Arabis thaliana* and *turrita, Sinapis Cheiranthus, Nasturtium pyrenaicum,* which, in spite of its name, is not a peculiarly Pyrenean plant; and one which is more so, *Cardamine latifolia,* like a greatly magnified *C. pratensis,* with leaves shaped liked those of the Watercress. Two of our common Violets now appeared, *Viola canina* and *V. tricolor;* while to *Silene Saxifraga* was added *S. nutans,* and a very beautiful common plant of the Alps and Pyrenees, *S. rupestris,* as well as *Stellaria Holostea* and *Cerastium arvense.* Along with *Geranium Robertianum* and *pyrenaicum* there was in abundance *S. sylvaticum* of the English mountains. I saw also *Oxalis corniculata.* A tall bush, belonging to the Flora of the high mountains, *Rhamnus alpinus,* was here in full flower. The *Leguminosæ* were fewer than usual; they included the Broom of the middle region of the southern mountains, *Sarothamnus purgans, Coronilla Emerus,* the stiff, but not inelegant *Trifolium montanum, Astragalus monspessulanus,* and the red variety of *Anthyllis Vulneraria.* Of *Rosaceæ,* there were added to those already recorded, *Rosa rubiginosa, Potentilla verna,* and *Alchemilla vulgaris.* Of *Saxifragæ,* besides *S. Aizoon,* there was our beautiful *S. granulata* (a mountain plant in the south of Europe), and a far rarer species than either, *S. media.* The Umbellifers appeared to be the same as in the previous day. To the common Elders was added *Sambucus racemosa,* now in full flower; it bears red instead of black fruit, and in that state I had found it in some of the forests near the Rhine, especially that of Stolzenfels, near Coblenz. Of *Rubiaceæ,* I only noted *Galium cruciatum.* The only additional plant of the Order *Compositæ* (except the *Cirsium* previously mentioned) was *Achillea chamæmelifolia,* a plant of the Eastern Pyrenees. The *Corollifloræ* also were mostly those which I had seen in the other valley. I must however add *Pinguicula grandiflora,* a plant common in the Pyrenees, often mistaken for a Violet by the non-botanical traveller; the exquisite *Primula farinosa,* of the Alps and the north of England; the large Alpine Forget-me-not (*Myosotis alpestris*); a tall *Pedicularis, P. verticillata,* growing profusely in the meadows near the principal village of the Republic; and, lastly, *Marrubium vulgare.* Of *Polygona,* besides *P. Bistorta,* there was a peculiar and curious mountain species with panicled inflorescence, *P. alpinum. Rumex scutatus* re-appeared, with *R. Acetosella.* Among monocotyledonous plants, *Paradisia Liliastrum* reigned supreme; a stately plant, with flowers of the purest white, of the shape and almost the size of a Hemerocallis, which Pyrenean tourists will see abundant, at its season, in the Vallée de Lys, near Bagnère de Luchon. *Narcissus poeticus* was as plentiful as ever; *Platanthera bifolia* was another ornament; *Muscari comosum* made its appearance, and in the lower and warmer part of the valley our blue garden Iris (*I. germanica*) grew. A *Veratrum,* probably *V. album,* so common in the Alps and Jura, not yet in flower, raised its strong, thick, green stems. The following plants, all of which were common to this with the preceding valley, I will simply enumerate:—

Clematis Vitalba.
Caltha palustris.
Aquilegia vulgaris.
Helleborus fœtidus.
Chelidonium majus.
Sisymbrium Sophia.
Sisymbrium obtusangul.
Sisymbrium austriacum.
Lepidium heterophyllum.
Reseda fruticulosa.
Saponaria ocymoides.
Erodium cicutarium.
Medicago suffruticosa.
Lotus corniculatus.
Cratægus Oxyacantha.
Amelanchier vulgaris.
Bryonia dioica.
Sedum dasyphyllum.
S. Telephium (& others).
Umbilicus pendulinus.
Lonicera Xylosteum.
Achillea odorata.
Tragopogon pratensis.
Fraxinus excelsior.
Convolvulus arvensis.
Lithospermum arvense.
Cynoglossum officinale.

Hyoscyamus niger.
Veronica Teucrium.
Veronica serpyllifolia.
Rhinanthus glaber.
Scrophularia canina.
Mentha sylvestris.
Stachys hirta.
Lamium maculatum.
Sideritis scordioides.
Globularia nana.
Armeria plantaginea.
Buxus sempervirens.
Euphorbia serrata.
Euphorbia Cyparissias.
Orchis mascula.
Bromus tectorum.

At the foot of the ascent to the lofty pass (the Col de Puymaurin) we encountered in profusion four of the most interesting plants we had yet seen; the tall *Anemone alpina,* with its great flowers, of the sulphur-coloured variety (which I have found the commonest both in the Alps and Pyrenees); the mountain Umbellifer (*Meum athamanticum*), a plant rare in the English mountains, common in the Pyrenees and Cevennes; *Orchis sambucina,* with its great spikes of flowers, both purple and yellow; and the delicately beautiful *Tulipa Celsiana,* also a plant of the Cevennes. As we wound our way up the face of the mountain towards the Col, we came among decidedly Alpine plants; the three Gentians which light up the lofty pastures with their dark blue flowers, *G. acaulis* and *verna,* known to all Alpine explorers; *G. pyrenaica,* peculiar to the Eastern Pyrenees; the small white-flowered *Ranunculus pyrenaicus,* the lovely *Hepatica, Crocus vernus,* and a pink *Androsace,* common on the Pyrenean summits, long confounded with *A. carnea* of the Alps, but to be described, as I am told, in the Supplement to the 'Flore de France,' under the name of *A. Lagerii.* One plant, though I did not see it till just on the French side of the pass, I cannot help mentioning, and with this I close my list: that exquisitely fringed and strangely coloured plant, one of the most delicate of Alpine vegetable products, the plant so much admired by Mr. Ruskin, *Soldanella alpina.* From this place a long and gradual descent brought us into the beautiful valley of the Ariége; and being now in a country well explored, and possessed of excellent Floras, I at last end this long memorandum, and finally take my leave.

Maianthemum bifolium *in Caen Wood, Hampstead, June,* 1861.

*To the Editor of the 'Phytologist.'**

It is now many years—above thirty—since I first had the good hap to discover this rare gem of Flora's diadem among the Beeches on that side of Caen Wood which is between Highgate and Hampstead, and on the very summit of the hill, nearly opposite Kentish Town.

The way to reach it is by the garden which lies at the Highgate extremity of the park and woods; and of course leave is to be obtained of the gardener, who will civilly give liberty in the morning, say from nine to ten o'clock, or at other times of the day, if the noble owner and family be absent at the time of application.

The visitor will be directed to walk down the gravel path, which has a shrubbery on one side (the left), and the park on the other (the right), to cross the valley at the head of the small reservoir, or pond, and to keep the grassy opening, having the meadows on the left and the wood on the right. After about five minutes' walk the Fir-trees appear, and there are under them two paths, one bearing a little to the left, close to the verge of the wood and adjoining the meadows, another leads straight onwards, up a little acclivity to a few large Beech-trees and a summer-house, and it is on the open space before this erection, surrounded by Beeches, that the plant grows.

When I first detected this rare British species, many years ago, as above related, there were two patches of it visible; one close to the path, about halfway up the hill to the place where the larger patch was and is. The former has long since disappeared.

The area covered by the *Maianthemum*, then, was probably about twelve or sixteen square yards, and the shape of the bed whereon it grew was almost square. About ten years ago it had very much enlarged its borders, but its figure remained still the same. It has no longer its former regular shape; though the space over which it spreads is closely carpeted with the plant, which maintains sole possession of the ground to the exclusion of other plants. With the exception of some Mosses, and a very few stray plants of the Wood Hyacinth, it is still the undisputed possessor of the soil.

I will not assert that it is native in this locality; but it may safely be said that there is no historical nor traditional evidence of its introduction. The only things planted here are Laurels and Rhododendrons, with neither of which was it likely to have been introduced.

Bishop's Wood, below the Spaniards Hotel, still produces the fine Rush *Scirpus sylvaticus*, also *Cardamine amara*, *Equisetum* *sylvaticum, Pyrus torminalis,* and *Viburnum Opulus, Chrysosplenium oppositifolium,* etc.

It is probable that *all* the woods about Hampstead and Highgate are coeval with the creation of the world; that is, they have existed now nearly six thousand years; they are as old as the very oldest of the Yews on Merrow Downs; they were planted by Nature, many years before Noah's Flood, and therefore both they and the frail vegetation which they shade, may be presumed to be natives of English or Middlesex soil.

The great bog behind Jack Straw's Castle yields, as it did half a century ago, abundance of the beautiful bog plant *Menyanthes trifoliata,* also *Drosera rotundifolia, Viola palustris,* and several Carices, such as *C. stellulata, C. ovalis, C. Œderi,* etc. *C. pulicaris* has been reported from this very place, and I hope it was not a starved form of *C. stellulata.*

The Lily-of-the-Valley was seen on the heath not many years ago; this is one of the few species of interest recorded by Johnson, more than two hundred and thirty years ago, as a Hampstead plant. *Orobanche major* was collected more than twenty years ago on the broomy marly part of the heath, near the lower pond, at the back of North End, and probably this species is still to be found here occasionally.

History of the Original Notice of the Publication of Maianthemum bifolium *as a Hampstead Plant. From a Correspondent.*

I will take the liberty of paying the debt of gratitude which British botanists owe to Mr. Hunter, the first observer of this rare plant, and who is the original authority for the first published notice of its growing in Ken Wood (Caen Wood).

The following short list of rare Hampstead plants is taken from the history of Hampstead, published by Mr. James Park in 1814; the names and localities were contributed by Mr. Hunter, who was then land-steward to the noble owner of this fine park.

Note. The locality is Ken Wood, unless where an additional locality is given, and the authority is that of the above-mentioned Mr. Hunter, his Lordship's steward. A few remarks will be subjoined:—

1. Stipa pennata.
2. Empetrum nigrum.
3. Myosurus minimus.
4. Scilla verna.
5. Convallaria maialis.
6. Convallaria Polygonatum.

7. Convallaria verticillata.
8. Convallaria bifolia.
9. Paris quadrifolia.
10. Sorbus domestica.
11. Rosa villosa.
12. Helleborus viridis.
13. Lathyrus Nissolia.

The first plant in this list (No. 1), quoted from Mr. Park's history, and resting solely on Mr. Hunter's authority, is one of the most doubtful or uncertain of all the dubious British species. *Empetrum nigrum* (No. 2) is truly native, but does not now grow near Hampstead, or surely it would have been recorded by the many botanists who have resorted thither during the last century and a half.* Mr. Hunter very probably observed *Myosurus minimus* (No. 3), but not in the wood. The habitat is possibly erroneously entered by the historian, whose botanical knowledge was probably neither very extensive nor exact. I will take the liberty of acquitting Mr. Hunter of this mistake. This gentleman was too well acquainted with rural affairs to have mistaken an agrarial weed for a sylvan plant.

That *Scilla verna* (No. 4), which grows here abundantly, may have crept into the text instead of *Scilla nutans*, good-natured people will readily admit.

Two out of the four Convallarias (Nos. 5 and 8) still grow in Ken Wood, and they are living testimonies of the accuracy of the gentleman by whom their occurrence there was first recorded.

That the other *two* (Nos. 6 and 7) are not there, who will venture to say?

The way to reach the only remaining station of the *Maianthemum* is by the gardens of Ken Wood, and to the gardener or steward, Mr. Cockburn, I have always applied when I wished to revisit this station. But many other lovers of rare plants as well as myself are indebted to this worthy official for permission to go up the hill to look at the plant. I beg to thank him publicly for his courtesy.

If the botanical visitor be an entire stranger, he should request the aid of one of the gardeners; and if this be not obtainable, he should follow the gravel walk to the reservoir at the end of the lawn which lies towards Highgate; crossing at the pond-head, a grassy, open walk leads up the hill not far from the verge of the wood which is opposite to Kentish Town. About two hundred yards from the pond, the path diverges to the left, both to avoid a rather steep acclivity and to keep nearer to the outside of the park; but the way to the spot where the rare plant grows is straight onwards up the mossy path, and not far from a rustic summer-house in a level spot almost surrounded and overshadowed by large Beech-trees. The plant does *not* grow under the Firs which grow on and about this hill, and which are prominent objects from the path across the fields between Hampstead Heath and Highgate, but near the Beech-trees, as above said, and between the summer-house and the fields through which the path leads to Highgate.

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* Dr. Soame remarked (1734)—"The Apothecaries' Company very seldom miss coming to Hampstead every spring, and here have their herborizing feast; and I have heard them often say that they have found a greater variety of curious and useful plants near and about Hampstead than in any other place" (Dr. Soame's Analysis of the Hampstead Waters, p. 27).

Some conjectures about the nativity of this rare species may naturally be expected from the present reporter, who has visited the locality many times during the lapse of years between 1830 and 1861.

When I first observed the species, I inquired of an old man who had known both the plant and its station for many years. He was an aged man, probably about seventy, when Mr. Cockburn and myself were young; and he asserted positively that it had not been planted there in his remembrance. No herbaceous plant grows there now, nor for many years previously to the present year, 1861, which is not indisputably of British growth or origin. The usual sylvan plants grow there, viz. the Wood Anemone, the Primrose, the Lily-of-the-Valley, the Wood Hyacinth or Bluebell, the commoner Grasses, Luzulas, and Ferns.

The introduced species are mostly shrubs and trees, and there is none of any account but the common Rhododendron, which has here, by the want of space and too much shade, been drawn up to an extraordinary height.

The *Sorbus domestica* (No. 10) I have never seen near Hampstead; but a Sorb often mistaken for its much rarer relation is not uncommon in the vicinity, both in the woods and hedges near Highgate, Muswell Hill, Hendon, Hampstead, and Finchley.

Helleborus viridis (No. 12) and *Paris quadrifolia* (No. 9) were observed by Mr. Collinson a century ago in this district (see 'Phytologist,' vol. v. p. 172). That they have not recently been reported from Hampstead, is no sure proof that they are not there.

Rosa villosa and *Lathyrus Nissolia* (Nos. 11 and 13) are among the doubtful species. They may have been erroneously recorded as Hampstead plants; and, after the example of the learned authors of the 'London Catalogue,' probably they should be put into the *Index Expurgatorius*, the limbo of British plants.

SIGMA.

British Museum, January 10th, 1862.

KENTISH BOTANY.

A Chapter on the Botany of Thanet.

The first week of August, 1861, was spent in the investigation of the indigenous or spontaneous vegetation of the north-eastern coast of Kent. Since the publication of Mr. Cowell's 'Floral Guide for East Kent,' there has been nothing published on the botany of this part of the county; and the present contribution is offered in the hope of inducing botanists to direct their attention to the Isle of Thanet.

Like most visitors who come here by water, we landed at Margate, and lost no time in sallying out to view the productions of the country which our London folk, with their usual good sense and sound judgment, have selected as the best locality where marine-bathing, land and sea breezes are to be had in perfection.

This part of Kent, its north-eastern corner, presents a singular contrast to the general aspect of this picturesque county in being almost flat and destitute of trees. It is a table-land in miniature, not supported by lofty mountains, but rising, as it may be said, out of the ocean's lap, and resting on a bed of chalk which is elevated from two hundred to three hundred feet above the level of the sea. Consequently the soil on the cliffs, and for some miles inland, is what is called marly, or chalky, or gravelly, and on the west and south-west the alluvial or river deposits predominate.

The most elevated parts are on the brink of the sea, and the general slope or declivity is towards the west, to the depression once filled by the ancient channel which separated this island, as it is called, from the rest of the county. This channel existed in days long past, and it is no myth; there was anciently a channel or strait which flowed in the direction of the Stour and Wantsume, and which was navigable down to a recent period of the history of England. In those times the sea flowed through the strait, entering at Reculver and flowing out at Richborough, or entering by the latter and joining the main ocean at the former.

Between Reculver on the north and Richborough on the south-east corner, an extent of nearly thirty miles, there is no stream nor streamlet which flows into the sea. The island is drained toward the western or land side, and the little water it yields is carried to the sea by the small rivers Stour and Wantsume; the latter enters the German Ocean near Reculver, and the other forms the haven of Sandwich, flowing into the sea near Richborough.

The soil of Thanet appears to be very fertile, the husbandry good, and the crops abundant; and this was to be expected from the traditionary character of the island, which is proverbial,—

> "When England wrings, (wails for want,)
> The Island sings," (for corn is dear, and plentiful here.)

To a botanist the isle is not so promising as it is to a cultivator, for there is no waste ground, no commons, and no bogs; there is a general uniformity of exposure, surface, soil, and tillage, consequently there is no great variety in its natural productions.

Another cause which restricts the botany of Thanet is the want of an undercliff. With the exception of a little bit of the rock at Broadstairs, the sea side of the cliff is destitute of vegetation.

Our first walk, on the west and south of Margate, not more than two or three miles from the town, afforded a sufficient sample of what we subsequently ascertained to be the prominent plants of Thanet.

Mercurialis annua and *Diplotaxis muralis** abounded everywhere, both in the fields and by the roadsides. *Note.* The fields in Thanet have no fences, and the roads are all without skirting walls, trees, or hedge-shrubs. Paths are also very common in almost all directions. Hence there is no impediment to the botanist; if he wishes to learn what grows on the ground, he need but look at his feet or on his right hand and on his left, and he will have to blame himself if he does not see everything which grows, both natural and cultivated.

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* This plant, evidently an intruder, was described by a now almost forgotten historian of Thanet in the following uncomplimentary terms. The farmers would then, and probably still would, rather have its room than its company:—

"A weed begins to infest the lands here which is not a little alarming to the farmers, as it is of a prolific kind and very difficult to be eradicated. It was produced a few years ago among some oats, which were freighted on board a vessel wrecked on the coast, and being washed by the tides along shore, was carried among the seaweed used for manure to different lands at the same time. It is of the class *tetredynamia* (*sic*). . . . The inhabitants call it the *Stinkweed*, from its fetid smell. It seems to be either the *Brassica muralis* of Hudson or a variety from it."—'New Margate and Broadstairs Guide;' by C. Le Bas, Esq. 1802.

There are several plants here which are both natural and artificial. The chief of these are semi-naturalized species, viz. *Trifolium pratense, Onobrychis, Hedysarum,* and *Medicago sativa.* We saw a very few starved examples of *Trifolium incarnatum,* but this latter species manifested no tendency to become spontaneous here.

The roadside plants, omitting the very common ones which appear everywhere, were *Smyrnium Olusatrum,* though now (August the 7th) long past its flowering-time, and *Pastinaca sativa* just coming into perfection. *Erigeron acris* and *Salvia verbenaca* grew on banks here and there, but the latter was neither in abundance nor of luxuriant growth.

We traversed the island along the cliff and inland in all directions, and a long list of what we did *not* see, though we hoped to see them, might easily be drawn up, but it would be a much longer one than the list of plants we *did* see.

Our first long excursion was across the fields to St. Peter's and along the cliff to Ramsgate and Pegwell Bay. At Pegwell there is a very thick deposit of plastic clay on the chalk, and something of an undercliff. *Note.* There is no undercliff between Reculver and Pegwell; the sea approaches to the base of the chalk and washes away the silt constantly falling from the upper surface and from the face of the rock, for atmospheric causes are in continuous operation, although their effects are only perceptible by the gradual diminution of the land on this side. These inroads of the sea have reduced the island to one-half of its area since the seventh century, as we learn from the Venerable Bede, who, in his 'Ecclesiastical History,' informs us that its extent in his time was about double its present dimensions. At the Ramsgate side of Pegwell Bay there is about half a mile of undercliff, similar to that at Kingsdown, on the western side of the Bay, three miles beyond Deal, but not nearly so productive of objects of interest to the botanist. We found this little bit, although chiefly composed of clay, with the adjoining beach, the best botanizing ground of the island.

The botany of Thanet may be subdivided into, first, the agrarial plants, or those which grow on cultivated ground or in small portions of waste, so called, but really places where manure is laid up and prepared for the fields, or by roadsides. The species that grow in the fields grow also by roadsides, because the fields are in close proximity to the roads; there is no fence and rarely a bank for separating the one from the other. The viatical plants, as they are called, though with more pedantry than truth in their nomenclature, do not exist here as a separate or distinct class. There are indeed some plants growing by the roadsides which do not grow in the fields, such as two of the *Calaminthas*, *Verbena*, *Salvia*, *Anthyllis*, etc. These also grow on the cliffs. All the field species grow by the roadside, but all the roadside species do not grow in the fields.

The second class will contain the maritime plants, and with these are always associated certain species which are not strictly coast plants, being found in inland situations; but these are conveniently grouped with the former. The aquatic and marsh plants will comprise all that we saw about Minster, Monkton, and Reculver, belonging to the third section.

In the first class, or cornfield plants, *Papaver hybridum* was not scarce in cultivated ground near Margate. As a Kentish plant it is not uncommon in almost all parts of north and east Kent where the chalk crops out, and where the land is in cultivation; the whole county is arable. Heaths and commons are comparatively rare in Kent, and do not exist in its extreme eastern portion.

Diplotaxis muralis was more common than Groundsel or Shepherd's-purse. This plant is by no means particularly attached to rich or marly soil; it thrives well on gravel.

Scabiosa arvensis (*Knautia*) in both its usual forms was common; so was *Galeopsis Ladanum* and *Stachys arvensis*. *Galium tricorne* appeared in some considerable plenty in a beanfield near Minster. *Linaria spuria* and *L. Elatine*, with *Reseda lutea* and *Mercuralis annua*, bring up the rear of a very small list of cornfield species.

There was one of the Grasses particularly plentiful in Thanet, and to which special attention was given because it has been classed, on high authority, among the suspected natives, and probably some would not hesitate to reject its claims even to a place among the excluded species. In Thanet and North Kent (between Lee and Keston Common, see 'Phytologist,' vol. v. p. 384) it is by far the most conspicuous of its genus. In the clover-fields especially, but in the fields generally, it is quite as common as *B. mollis.* There is in these places no grass so common, with the exception of the commonly cultivated Ray grass, *Lolium perenne.* As a "temporary straggler" this plant does not appear in Thanet, nor in North Kent. The corn and clover fields in the island are full of it. If *Bromus arvensis* is not yet naturalized, it is in a fair way of speedily becoming so; no grass is more common here than this, except *Lolium perenne* as above said, which is universally cultivated. Are there any botanists who question its claims to rank among acknowledged British productions? *Lolium multiflorum,* a more valuable grass than *L. perenne* for either green or dry fodder, is neglected in Thanet: a few straggling plants only were seen near Margate. This Grass is increasing in the vicinity of London, a proof that it constitutes a no small portion of the hay consumed in the Metropolis. When the Kentish farmers have ascertained its value, we may expect to see it dispersed as a weed and as plentiful in their tillage-lands as is now *Bromus arvensis.*

The maritime or coast plants are far more numerous and important than the agrarials, or than such of them as we saw in Thanet last August (1861).

From Margate we searched the entire coast by Fairness, Kingsgate, the North Foreland, Broadstairs, Ramsgate, and Pegwell to Pegwell Bay, with the following results. At Broadstairs the entire face of the cliff, which is here nearly perpendicular, and in some parts probably near two hundred feet high, was covered with the following plants, viz.:—*Centranthus ruber,* most abundant and very luxuriant; *Cheiranthus Cheiri,* very fine and nearly as plentiful; *Matthiola incana,* not quite so numerous as the two former, but equally well naturalized; *Beta maritima* and *Arenaria marina* grew both on the rock and also on the débris at its base.

The most remarkable maritime plants observed at Pegwell Bay were *Frankenia lævis,* not very common; *Althæa officinalis,* only one plant or bush, but a large one; *Cakile maritima; Eryngium* *maritimum;* the marine *Atriplices,* viz. *A. marina, A. laciniata,* and *A. portulacoides,* with several other commoner coast species, for whose names there is no room in this article.

The variety *Artemisia gallica* was seen near the river which forms the modern haven or roadstead of Sandwich. This variety, it may be remarked, is not the same as the maritime species of this genus which grows on the French shores of the Mediterranean, and which is so called by Continental botanists.

The plants observed on the top of the cliff, and in other places between Ramsgate and Sandwich, and which are found here and there in most parts of the island, were, Fennel, of gigantic size, *Smyrnium Olusatrum, Medicago sativa, Onobrychis sativa,* wild Parsnip, wild Carrot, etc. Wild Celery grew about the ditches, almost always associated with *Œnanthe Lachenalii.*

Those who are sceptical about the existence of *Smyrnium Olusatrum* as a wild plant, and also have doubts about the complete naturalization of *Medicago sativa* and *Onobrychis sativa,* should visit the Isle of Thanet in August or in the end of July. Then and there they cannot help seeing the former in great plenty at a distance from the ruins of religious houses, and, indeed, far from all dwellings whatever. Also the two latter may be seen as well established as the common Clover, *Trifolium pratense,* which nobody has ever suspected to be an escape from cultivation.

The rarest and most remarkable plant which we saw in Thanet, and which belongs to this class, was *Lepidium Draba,* found growing in no great quantity, and very stunted in its growth, on the extreme verge of a very lofty cliff about halfway between Margate and Birchington. This has already been recorded as a Thanet plant on the authority of the Rev. M. J. Berkeley, who saw it at Broadstairs and St. Peter's: the former locality produces several species usually deemed alien. This plant, which is rapidly gaining ground, is recorded from near Herne Bay, which may also be called in question as a spurious station; but let the plant once get a footing, and there it will remain till the ground is used for some purpose other than the production of stray plants. This is not the case with the locality near Margate. Here there is nothing either in the place itself, nor in the associates of the plant, which throw any suspicion on the origin of the species, which, for anything that appears to the contrary, may have existed on this lofty exposed situation ever since the rock was clothed with the vegetation which still covers it. This cannot be a permanent station; it must soon disappear in the sea, which here is incessantly encroaching.

We have still to record a few important species which were observed about the shore between Reculver and St. Nicholas.

The first of these is *Sambucus Ebulus,* which grew in a ditch beside the ancient wall of this interesting remnant of Roman dominion, and of early Anglo-Saxon piety.* This locality will, by some botanists, be reckoned among the *loca suspectiora* (spurious localities).

Near Reculver, outside the sea-wall, *i. e.* between the sea-wall and the beach, there grew abundance of *Ruppia,* but whether *R. marina* or *R. rostellata* we could not determine, for want of sufficiently developed fruit. In the same ponds there was also plenty of *Zostera,* but without the slightest vestige of fruit.

From Reculver, and all along the shingly beach for a mile or so towards St. Nicholas, the usual beach plants, such as *Glaucium luteum, Salsola, Salicornia, Statice, Glaux, Arenaria marina, etc.,* abound. *Carex distans* also occurred, and the much rarer *C. extensa,* a Carex hitherto, so far as known to the writer, unreported in the 'Phytologist.'

One of the principal objects of our recent visit to this remote nook of Kent was to trace the anciently-known river, or rather rivulet, *Wantsume,* from the Stour to the sea.

The ancient historians of England, beginning with the Vener-

* The sole remnant of the church of Reculver, one of the most ancient in Kent, is the west gable, flanked by the "sister spires," [a] a venerable memorial of bygone times. It is preserved from falling into utter ruin by the Trinity House Corporation, because it is a good sea-mark to the mariners navigating that part of the German Ocean. The north and east walls have long disappeared. The exterior wall of the ancient Roman fortification is only visible on the west; all the rest have been swallowed up by the sea centuries ago.

In the Bibliotheca Topographica Antiq. Kent, there is a long description of the church and monuments then existing, and there it is mentioned that the Fig and Dwarf Elder grew among the ruins:—

"The Fig-tree, *Ficus Carica,* appears among the bushes along the south wall, and the dwarf Elder, *Sambucus Ebulus,* abounds there.—William Boys, Sandwich, 1783" (Bib. Topogr. Antiq. Kent, No. 18).

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[a] There is a legendary story or a tradition that these twin spires were erected by a lady of some Religious Order, whose sister, an abbess, perished opposite Reculver. To commemorate her sister's fate and her own escape, and to preserve others from a similar fatality, it is said that she caused to be built the *Sister Spires.*

able *Bede,* or *Beda,* as the Rev. Josh. Stevenson would have us write his name, relates that, in his time, the channel separating Thanet from the mainland of Kent was at least half a mile wide. Subsequent writers inform us that, down to so recent a period as that of Henry VII. or Henry VIII., ships of small burden in winter sailed up this strait, and thus both shortened the distance and escaped the perils of the stormy sea by the North Foreland.

Modern historians and geographers do not inform us when this passage was abandoned, but they are very circumstantial in their accounts of the present state of this channel, which was anciently several miles broad. The popular belief is, that when the river Stour, which flows by Ashford, Wye, Canterbury, etc., approaches the island near Grove Ferry,—a name significant of the ancient condition of this locality,—its stream separates into two rivers, one of which flows north and the other south. "Here the Stour," writes a modern authority, "parts into two branches, one of which falls into the estuary of the Thames, and the other into Pegwell Bay. A short walk along the river, from Minster to Grove Ferry, will satisfy the curious inquirer that the river Stour does not produce an off-shoot, or bye-blow, or bastard river, or a little Stour, but keeps in its own channel, which is not wide, but pretty deep, for it is navigable above Grove Ferry, and conveys all the water it has at Canterbury, and all that it receives in its course from the city to the island, and discharges the whole into the sea not far from Richborough. In brief phraseology, the account universally given and credited is a myth; or, in plainer terms, there is no division nor separation nor parting of the waters of the Stour. It is another and a distinct streamlet that flows to the northward, and falls into the sea or the Thames estuary near Reculver.

Review.

Vorgefasste Botanische Meinungen, vertheidigt von Dr. JOHANNES ROEPER, Prof. in Rostock.

This pamphlet, which has reached us lately from a kind Continental correspondent, to whom the Editor of the 'Phytologist' gladly acknowledges his obligations for other contributions, is not written in commendation of the New Theory of arranging plants, by Prof. Agardh.

This New Theory has been a theory, and nothing else, in England; no practical results have been visible hitherto. Its announcement in a very few of our periodicals, and a somewhat elaborate notice in our columns, have produced no sympathetic response.

New systems seldom experience a hearty welcome in England, even when introduced by a native, but when propounded by a foreigner, both the inventor and his inventions meet with a cool reception. Every reader of botanical history knows how Linnæus was treated in this country by the celebrities of his era: for example, by Sir Hans Sloane and Dr. Dillenius, the one the great patron, and the other the great leader or chief of the botanists of that period.

The ancient Swedish system, the Linnæan, was so easy that it could be learned, even by a child, in a few minutes. Its application was in most cases as certain as it was simple. The modern system, viz. the New Theory of Classification, by Prof. Agardh, has neither of these characters. It would be a labour to acquire it; and would it answer the learner's expectations when he understood it?

The Linnæan practice of counting the stamens and styles was of no great advantage when learned, for the learner soon knew by other more obvious and not so variable parts of the floral and vegetative organs, whether any given plant submitted to him had usually five or ten stamens, or an indefinite number, and, consequently, belonged to Class Pentandria or Decandria, or Icosandria, or Polygynia. He also readily knew such as had four or six stamens, from the shape of the corollas, the form of the stem, the disposition of the leaves, etc. There was nobody, even in those remote times of ignorance and blind submission to authority, who counted styles and stamens; though the system was universally praised, it was in practice universally repudiated.

If it be asked, what was the use of the Linnæan system?—the answer is, very much; it amused and gratified its possessors, and its learned terminology tickled the ears of groundlings, as "words of learned length and thundering sound" passed current among the vulgar as the representatives of genuine scientific information; and those who could rap them out with more than ordinary fluency and force, were deemed a race of superior beings.

If Linnæus had done no greater thing than that of inventing and teaching the doctrine of the sexuality of plants, his claims to distinction and to the gratitude of posterity would have been very slender; his fame would have rested on a narrow basis.

Jussieu and his followers, among whom we will persist in placing Prof. Agardh, and we will not hesitate to express our belief that he is one of the most meritorious, have done something, to say the very least, to rescue botany from the reproach justly cast on it, in our youthful days. That Agardh's systematic arrangement of botanical orders is exactly the *right one*, we will not maintain, for we do not know; but that he has laboured hard in evolving relationships, affinities, and other accidents of plants, is very manifest from every page of his great work on this subject. He has wrought well, if not wisely, and he shall have our unqualified and disinterested thanks for his pains.

Dr. Roeper, the author of the pamphlet set at the head of this article, entertains views of classification not in unison with those of his contemporary, the learned Swede. Well, why not? One man's opinion may be as good as another man's. The relationships of genera and families are so numerous, and are viewed under so multifarious aspects, that botanists may be excused when they express different opinions about their value.

For example, Professor Agardh believes that *Adoxa* should stand near *Ranunculaceæ*, and Professor Roeper that it has a closer connection with *Sambucineæ*, a section of the Order *Caprifoliaceæ*. "Who can decide when doctors disagree?"

When the great luminaries can only cast fitful, glimmering flashes on the dark domains of science, what can be expected from the smaller orbs, which shine only with borrowed lustre? Nothing, but to make darkness visible. The perplexed neophyte is the more bewildered the further he proceeds, and in his despair of being able to extricate himself from the entangling maze, is disposed to abandon all systems and resort to the ancient alphabetic method of arrangement.

An imperfect system is better than none, on the principle that half a loaf is better than no bread; and it little boots the learner whether it be called a natural or an artificial system of classification. If it serves his purpose, he may well be thankful, and need not cavil at the name. No doubt it would be more conducive to the progress of the science if professors, teachers, lecturers, and authors, would condescend to expound the science on some well-known uniform method, till a decidedly better system was promulgated, one which, like the Linnæan, might be almost certain of universal approbation and adoption in every botanical and medical school. But it is idle to speculate on the possibility of fettering the human intellect, or to imagine that the appetite for notoriety can be regulated by public wants in an age when every teacher is expected to be an author, and when every author is an inventor or an innovator, which is much the same.

The *Araliaceæ*, or family of the *Aralias*, do not agree very well with each other. Few points of obvious resemblance exist between our two British species, *Adoxa moschatellina*, and *Hedera Helix*, Common Ivy. The former is a very humble, tender, almost succulent plant, only a few inches high, and of short duration; the Ivy is a very tough arborescent climber, sometimes a hundred feet long, and possessed of almost everlasting vitality.

As the *Ranunculaceæ* are a very heterogeneous assemblage, and of so miscellaneous a family, a little plant and single species, like the *Adoxa*, could not much disturb the harmony, and it might be joined to this Order, as Dr. Agardh suggests, without any very violent infringement of the laws of relationship and affinity. The other genus, viz. *Hedera*, might be combined with *Caprifoliaceæ*, with which it agrees better in popular characters than it does with the little-known obscure genus wherewith it is associated.

BOTANICAL NOTES, NOTICES, AND QUERIES.

OVA *for the* "NIDUS EQUÆ" *of the* 'PHYTOLOGIST,' *No.* 50, *June* 1859, *p.* 189; *and a* REPLY *to No.* 60, *April* 1860, *p.* 104.

Ovum 1.—This and all the other ova are as mysterious as the nidus in which they may one day be hatched. As there were none but Scottish Ferns amongst those in pots out-of-doors, Mr. W. thought that the gardener might have mixed those in the greenhouse with the hardy; but the gardener being questioned on the subject, he denied having done so; besides which, the lady on her return from Scotland recognized her *special beauty*.

Ovum 2.—"Telling the exact spot," together with the former assertion, and both verified by the husband on the following day by letter, would be strong circumstantial evidence in favour of no mistake.

Ovum 3.—How could Mr. W., either by visiting the spot or by his own personal evidence, ascertain whether *Blechnum alpinum* "really grows on an old stone wall," etc., when, by his query No. 1, he shows it was a *solitary plant*, and brought away from the habitat?

Ovum 4.—Mr. W.'s query No. 2, "Can it have been planted?" will exculpate him at least from wishing the public to swallow the *ovum* raw, or in other words, to take it for granted either that the Fern was of British origin, or that the occurrence of a single root should be conclusive of its wildness.

Ovum 5.—"Mistakes will happen in the best-regulated families," and it is therefore possible that one or more may have occurred in this instance; but, as before stated, the circumstantial evidence is so strong that it would be but gallant to give the fair finder the benefit of the doubt, and admit that a *solitary plant of Blechnum alpinum* was found in Scotland, when and where specified. G. B. WOLLASTON.

Chiselhurst, April 2, 1860.

LIST OF PLANTS WHICH FLOWERED IN MAY, 1861, NEAR ROSS, HEREFORDSHIRE.

Ranunculus hederaceus, *L.*
Ranunculus auricomus, *L.*
Ranunculus repens.
Ranunculus aquatilis, *L.*
Aquilegia vulgaris.
Papaver Rhœas.
Fumaria capreolata, *L.*
Fumaria officinalis, *L.*
Coronopus Ruellii.
Lepidium campestre, *Br.*
Arabis hirsuta, *Br.*
Cardamine impatiens, *L.*
Sisymbrium officinale.
Sinapis nigra, *L.*
Nasturtium officinale.
Sinapis arvensis.
Helianthemum vulgare, *Gært.*
Viola canina, *L.*
Polygala vulgaris, *L.*
Lychnis Flos-cuculi.
Spergula arvensis, *L.*
Arenaria serphyllifolia.
Sagina procumbens, *L.*
Stellaria graminea, *L.*
Stellaria uliginosa.
Cerastium triviale.
Malva rotundifolia.
Linum catharticum.
Geranium molle.
Geranium dissectum.
Geranium lucidum, *L.*
Euonymus europæus, *L.*
Rhamnus Frangula, *L.*
Medicago lupulina.
Spartium scoparium, *L.*
Lotus corniculatus.
Trifolium repens, *L.*
Trifolium pratense.
Vicia sativa, *L.*
Vicia angustifolia, *R.*
Vicia hirsuta, *Koch.*
Hippocrepis comosa, *L.*
Spiræa Ulmaria, *L.*
Prunus avium, *L.*
Potentilla anserina, *L.*
Potentilla Tormentilla, *Sibth.*
Potentilla, β, nemoralis, *Nestl.*
Geum urbanum, *L.*
Rosa canina, *L.*
Rosa arvensis, *L.*
Pyrus Malus, *L.*
Pyrus torminalis, *L.*
Pyrus Aria, *Sm.*
Pyrus Aucuparia, *Gært.*
Alchemilla arvensis, *L.*
Alchemilla vulgaris, *L.*
Bryonia dioica, *L.*
Montia fontana, *L.*
Saxifraga granulata, *L.*
Saxifraga tridactylites.
Chrysosplenium alternifolium, *L.*
Adoxa moschatellina, *L.*
Ægopodium Podagraria.
Sanicula europæa, *L.*
Bunium flexuosum, *With.*
Œnanthe crocata, *L.*
Anthriscus Cerefolium, *Hoffm.*
Scandix Pecten-Veneris, *L.*
Chærophyllum temulum, *L.*
Sambucus nigra, *L.*
Viburnum Lantana, *L.*
Galium Aparine, *L.*
Galium cruciatum, *With.*
Asperula odorata, *L.*
Sherrardia arvensis, *L.*
Fedia olitoria, *Vahl.*
Valeriana dioica, *L.*
Tragopogon minor, *L.*
Apargia hispida, *Willd.*
Hypochœris radicata, *L.*

Crepis virens, *L.*
Hieracium Pilosella, *L.*
Hieracium murorum, *L.*
Lapsana communis, *L.*
Chrysanthemum Leucanthemum, L.
Convolvulus arvensis, *L.*
Vinca minor, *var.* alba, *L.*
Veronica montana, *L.*
Veronica Anagallis, *L.*
Veronica Beccabunga, *L.*
Veronica serpyllifolia, *L.*
Pedicularis sylvatica, *L.*
Pedicularis palustris, *L.*
Thymus Serpyllum, *L.*
Rhinanthus Crista-galli, *L.*
Melampyrum pratense, *L.*
Myosotis cæspitosa, *Schultz.*
Anagallis arvensis, *L.*
Cynoglossum sylvaticum, *Hænke.*
Cynoglossum officinale, *L.*
Lysimachia vulgaris, *L.*
Euphorbia helioscopia, *L.*
Urtica urens, *L.*
Urtica dioica, *L.*
Rumex Acetosa, *L.*
Rumex Acetosella, *L.*
Plantago lanceolata, *L.*
Quercus robur, *L.*
Quercus sessiliflora, *Sm.*
Orchis latifolia, *L.*
Orchis maculata, *L.*
Orchis Morio, *L.*
Listera ovata, *Br.*
Ophrys muscifera, *Huds.*
Paris quadrifolia, *L.*
Allium ursinum.
Scirpus palustris, *L.*
Potamogeton natans, *L.*
Eriophorum polystachyum, *L.*
Carex pallescens, *L.*
Carex divulsa, *Good.*
Carex vulpina, *L.*
Carex paludosa, *L.*
Carex sylvatica, *Huds.*
Carex paniculata, *L.*
Carex fulva.
Carex, β, speirostachya, *Sm.*
Carex riparia, *Curt.*
Carex hirta, *L.*
Carex panicea, *L.*
Carex pilulifera, *L.*
Carex flava, *Huds.*
Carex acuta, *L.*
Carex Pseudo-Cyperus, *L.*
Carex stellulata, *Good.*
Carex pulicaris, *L.*
Carex vulgaris, *Fries.*
Carex muricata, *L.*
Carex intermedia, *Good.*
Carex remota, *L.*
Alopecurus pratensis, *L.*
Milium effusum.
Poa nemoralis, *L.*
Poa pratensis, *L.*
Melica nutans, *L.*
Melica uniflora, *Retz.*
Bromus mollis, *L.*
Glyceria fluitans, *Br.*
Equisetum arvense, *L.*

FERNS FOUND AT WESTON-SUPER-MARE.

I send a list of Ferns I found at Weston-super-Mare and its vicinity last autumn:—*Lastrea Filix-mas*, with vars. *Borreri* and *dilatata*; *Athyrium Filix-fœmina*; *Pteris aquilina*; *Polystichum angulare*, with var. *acutum dissectum* and var. *subtripinnatum*; *Polystichum aculeatum*; *Scolopendrium vulgare*, with vars. *submarginatum* and *multifidum*; *Polypodium vulgare*, *P. canariense* (this foreign specimen I found at Breame Head), and *P. calcareum* (found at Cheddar); *Asplenium Adiantum-nigrum*, *A. Ruta-muraria*, with var. *variegatum* (at Woodspringe Priory), and *A. Trichomanes*; *Ceterach officinarum*; *Cystopteris fragilis*, and *C. angustata*. I do not know if a list of Ferns found at Weston has appeared in the 'Phytologist;' if not, perhaps you would like to insert it.

Chase Cottage, Enfield. HENRY ASTON WALKER.

A FEW BOTANICAL SCRAPS.

EPIPACTIS PURPURATA.—There are many botanists who suppose this Orchis to be a *variety* of *E. latifolia* or *E. media*, but are these not sufficient botanical characters to entitle it to the rank of *species?* *E. latifolia* can be grown year after year, either in the open border or in pots, and is a very common Orchis in Kent, and in most of the counties in England; but, on the contrary, *E. purpurata* is *parasitical* to either Hazel or Beech, and cannot be grown artificially even with the greatest care. It is also very rare in Kent, having only seen one Kentish specimen, which I found near Dunton Green, and was one hour and a quarter in taking it up, so that I might neither by accident or haste injure its fibrous roots. It was seated (if I may use the expression) upon the root of a Házel, and removed without damage to my garden. I again planted it, covering it with a handlight, on the root of a Hazel, and I suppose by its partial contact it did just appear the following year, and then dwindled away. Is *E. media* a parasite, or only a synonym of *E. purpurata?* If not, let them be separated, and give this last its true position, viz. that of a *species.* *E. media* I am unacquainted with, unless it be the same as *E. purpurata*, which I have invariably found to be parasitical. It is abundant in Dorsetshire, etc. *E. latifolia* is not a parasite.

ERIGERON CANADENSIS.—This plant, supposed to be of exotic origin, came up in the greatest profusion, together with small quantities of *Melilotus leucantha*, at the Beckenham station of the Mid-Kent Railway, *immediately after the excavation for the same.* It appeared in *virgin soil* of sand and gravel, at depths varying from five to ten feet. The above must be very strong presumptive proof of its indigenous growth.

CLAYTONIA PERFOLIATA.—Is this pretty delicate-looking plant known to be an alien? It has been sent to me by E. J. Lawrence, from near Muddiford in Hants; and more recently, by a lady, from near Woking (December 1861) in Surrey. In both localities apparently wild, certainly perfectly naturalized.

SCROPHULARIA VERNALIS.—I had the gratification of finding this plant in considerable quantity in April, 1861, in the parish of Chiselhurst, Kent, growing with the common Nettle (*Urtica dioica*), and resembling it so nearly, except in its floral spike, that any ordinary observer might easily overlook it. I am not aware that this rarity is recorded for Kent, although it is for the continguous counties of Surrey and Middlesex.

RUBUS LACINIATUS.—This Bramble is a common weed in my garden, seeding itself everywhere, and is too unlike any of our British *Rubi* to lead me to doubt its specific character. The fruit is much larger and of a different shape to the ordinary Blackberry. In the December number, 1861, of the 'Phytologist,' Mr. T. R. A. Briggs mentions having found it near Plymouth; I have also found it, August 1861, at Swinnerton, near Stone, in Staffordshire. But, in my case, I am persuaded that it is a *variety* only of one of our common *Rubi* (*R. corylifolius?*), although the cutting of its leaves exactly resembled those in my garden, except in their lesser size.

OXALIS ACETOSELLA *versus* TRIFOLIUM REPENS.—Although I at one time fully coincided with Mr. W. J. H. Ferguson, who writes in the 'Phytologist' for January, 1862, in supposing the *Oxalis* to be *the* Irish Shamrock, and am still doubtful on that point, I cannot by any means "safely conclude" that, because the poor Irish snatched a plant of "sharp taste" from the *ditches*, it was an *Oxalis;* but rather, that the plant was the common Watercress (*Nasturtium officinale*), which has a *sharp biting taste*, and grows in ditches, its natural locality. The *Oxalis*, on the contrary, but rarely; dry shady banks and woods being the places it delights in.

May I suggest the possibility of the true Shamrock being neither the one nor the other of the plants in question, but *Oxalis corniculata*, plucked by St. Patrick from the gardens of the monastery, or elsewhere, to illustrate the doctrine of the Three in One. I have two reasons for suggesting this; first, that most Irishmen on St. Patrick's Day, wear a piece of gold leaf mingled with the Trefoil, which may represent the *golden flower* of *O. corniculata*; and secondly, that it is hardly likely that *Trifolium repens*, Dutch Clover, was introduced into Ireland so early as St. Patrick's time.

GERANIUM PYRENAICUM.—Is plentiful in two localities in this neighbourhood; in one of which it is as apparently wild as any other hedge plant, but in the second it is the hedge of a garden.

G. B. WOLLASTON.

PALE PRIMROSES.

Mr. Todd's note to Milton's Poetical Works, 'Lycidas,' vol. v. p. 45, on "the Primrose that forsaken dies," asks (referring to Shakspere's "pale Primroses that die unmarried,") why does the Primrose die unmarried? and then answers, Because it *grows in the shade uncherished and unseen by the sun*, which was supposed to be in love with some sorts of flowers. Would some of the readers of the 'Phytologist' inform me whether pale Primroses produce seed or not? If not, then I think the meaning of Shakspere is clear.

H. B.

Our readers will be sorry to hear of the demise of William Borrer, Esq., F.R.S., F.L.S., etc., at his residence, Henfield, Sussex, one of the oldest contributors to the 'Phytologist,' and one of its most steadfast friends and zealous supporters. The mournful event happened on the 10th instant, and the deceased was in his eighty-first year. A short memoir of this eminent botanist and exemplary man may be looked for in our next number.

NOTICE TO CORRESPONDENTS.

If W. Ashley and Ruricola of Sheffield will send their address to A. I., 28, Upper Manor Street, Chelsea, they will receive a private communication, which has been as far as Sheffield and returned undelivered, because the address was not sufficiently explicit.

Communications have been received from

John Sim; C. J. Ashfield; W. Pamplin; James Backhouse, jun.; S. Beisly; W. Winter; G. B. Wollaston; W. L. Notcutt; J. S. M.; W. Ashley; Ruricola; P. T. O.; Rev. R. H. Webb; H. Beisly; T. R. A. Briggs; Charles Howie; W. P.

RECEIVED FOR REVIEW.

The Preston Chronicle, November 30th. Notes on Books.
The Malvern News and Journal, December 4th.

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